

Notes on Trinidad plants

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In the fall of 1924, on his return to the States from a sojourn and collecting trip in the vicinity of Kartabo, British Guiana, the writer spent a few days at the island of Trinidad, British West Indies. August 17th and 18th, 1924, were spent in visiting points in the northern part of the island, with headquarters at Port-of-Spain. Plants were collected at four localities as follows: (1) vicinity of Blue Basin, 6 miles north of Port-of-Spain; (2) Valencia, 20 miles due east of Port-of-Spain; (3) 6 miles north-east of Sangre Grande along the Toco road; and (4) Balandra Bay on the rocky exposed east coast about 10 miles from the northeast extremity of the island. All of these localities are in the northern quarter of the island and as the present notes represent a hasty collection from the region they may best serve as a list of the plants collected and an indication of the most conspicuous and common plants to be met there. The specimens, representing 46 species, are now in the Herbarium of the Carnegie Museum at Pittsburgh, Pennsylvania.

Trinidad is the most southerly of the West Indian Islands, with a flora, fauna, and geology closely allied to that of northern South America, from which it is separated by the Gulf of Paria, the marginal extensions of Trinidad being less than 20 miles from Venezuelan shores, with which there was at one time a probable connection. The island is situated between $10^{\circ} 3'$ and $10^{\circ} 50'$ North Latitude and $60^{\circ} 55'$ and $61^{\circ} 56'$ West Longitude.¹ Its average length from north to south is about 69 miles, its breadth 54 miles. Three parallel mountain ranges traverse the island from east to west, the highest being that in the north, composed mostly of pre-Tertiary, metamorphosed, sedimentary rocks rising to more than 3000 feet. To the south lies an undulating blanket of Tertiary and Recent sediments with inliers of Cretaceous age. Igneous rock is found only at one place on the north coast near Toco. In the center of the islands is a range of mountains running diagonally from the southwest to the northeast rising to 1000 feet, and in the south there is a broad belt of low mountains seldom rising above 100 feet in

¹ For a general description of Trinidad see Handbook of Trinidad and Tobago. Port-of-Spain, 1924.

elevation. The hills of the northern and southern ranges are densely wooded.

The climate is tropical and two seasons are evident, one a dry season from January to the middle of May, with an average rainfall of 3 inches per month, and the other a wet season from June to December, with an average rainfall of 8 inches per month. A short dry season of four weeks, called "Indian summer," occurs in October. The mean annual rainfall is 63.22 inches, although that of 1921 reached 85.13 inches. The coolest period is from December to April. The average temperature is 80° F., the mean diurnal temperature being 84° F., the mean nocturnal 74° F.

Three mosses, representing three families, were collected near Sangre Grande. *Leucobryum martianum* (Hornsch.) Hampe and *Calymperes donnellii* Austin were found thriving on a sand-gravel bank while *Rhaphidorrhynchium subsimplex* (Hedw.) Brotherus grew both on the bank and on several dead logs in the vicinity. The latter is apparently a very common moss here, and of South American affinity. The writer collected it abundantly in the rain-forest of British Guiana.

Near Blue Basin we visited a cacao grove where cacao, *Theobroma cacao* L. and coffee, *Coffea arabica* L. were being cultivated. On the floor of the cacao grove, where there was considerable shade and comparatively few plants, the ferns *Dryopteris poiteana* (Bory) Urban and *Dryopteris tetragona* (Sw.) Urban seemed very much at home. With the ferns occurred *Amaranthus spinosus* L., a species of eastern United States, which seemed strangely out of place. On the branches of the trees in the grove *Polypodium incanum* (Sw.) and *Polypodium lycopodioides* L. were densely matted, in some instances completely covering the limbs. Other ferns frequently noted were *Pityrogramma calomelanos* L., the "Silver fern," so called because of the white powder on the under side of the fruiting frond; *Dryopteris parasitica* O. Ktze., which was collected in the gutter along the road; and *Alsophila microdonta* Desv., an enormous fern over 10 feet in height which also was collected in the Guiana rain-forest. Near Blue Basin a specimen of *Juniperus lucayana* Britton was found. It has been introduced, however, as there are no native conifers on the island. The striking lobelia, *Centropogon cornutus* (L.) Druce, which was also found

in Guiana, occurred here as well as at Sangre Grande and here the composite, *Clibadium surinamense* L. grew to a height of more than 6 feet, together with the shrubby *Hamelia erecta* Jacq.

Along the roads of the island were frequently observed the canna, *Canna coccinea* Ait.; the musaceous *Bihai psittacorum* (L.f.) Kuntze, with conspicuous orange flowers and large, reed-like stems; *Sida carpinifolia* L.f., a widely distributed tropical weed; the verbena, *Valerianodes cayennense* (L. C. Rich.) Kuntze; and the two madders, *Borreria laevis* (Lam.) Griseb. and *Borreria verticillata* (L.) Meyer. The delicate *Tussacia pulchella* (Donn) Reichenb., a member of the Gesneriaceae, is found here along roadsides, with *Physalis angulata* L.

Near Valencia, on gravelly soil, occurred the sedge, *Rhynchospora cephalotes* (L.) Vahl. Here were also collected *Clusia martini* Sagot, with remarkable, smooth, thick, obovate leaves, and the South American melastoms, *Miconia ciliata* (L. C. Rich.) DC. and *Pterolepis glomerata* (Rottb.) Miq. Not far from these shrubs grew the gentian, *Chelonanthus chelonoides* (L.f.) Gilg, as well as *Achetaria scutellariodes* (Benth.) Kuntze, and, trailing over the ground, the tropical American *Mandevilla tomentosa* (Vahl) Kuntze.

About some of the plantations specimens were collected of nutmeg, *Myristica fragrans* Houtt, extensively cultivated in the neighboring island of Grenada; the avocado pear, *Persea persea* (L.) Cockerell, in fruit; the orange, *Citrus aurantium sinensis* L.; and the grapefruit, *Citrus grandis* (L.) Osbeck. Trailing on the sandy soil were escaped squashes, *Cucurbita maxima* Duchesne. The flame tree, *Poinciana pulcherrima* L. was abundant as an ornamental, and *Hibiscus rosa-sinensis* (L.), a mallow with great, red flowers, was here used extensively for hedges, as it is in all tropical countries.

At Balandra Bay where the rocky coast is exposed to the open sweep of winds from the sea, and where the spray from the high dashing waves reaches it, there is a beautiful example of wind-pruned vegetation on the brink of the cliff, and the plants constituting this mat of woody growth were very interesting. Among them were *Randia mitis* L.; *Coccolobis uvifera* (L.) Jacq., the sea-side grape; and the mangrove, *Rhizophora mangle* L., which grows here as a dwarfed shrub. Over the rocks on the top

of the cliff was found a climbing milkweed, *Metastelma decaisneanum* Schlechter, and on the top of a nearby hill were found the calabash, *Crescentia cujete* L., and two members of the madder family, the tree-like *Isertia parviflora* Vahl, and the trailing *Tontanea guianensis* Aublet.

While many of the plants observed were obviously of South American affinity, a detailed study of the flora of the island may well show other relationships, as is indicated by the occurrence here of *Tussacia pulchella* (Donn) Reichenb., a species from Panama and Jamaica, and the fact that Hitchcock² reports very few of the grasses of the West Indies occurring also in British Guiana. Further study of Trinidad plants will furnish not only pleasant botanizing but profitable results as well, particularly from a distributional standpoint.

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² Hitchcock, A. S. Floral aspects of British Guiana. Ann. Rep. Smithsonian Inst. 1919: 301. 1921.